FIG. 1
PRIOR ART

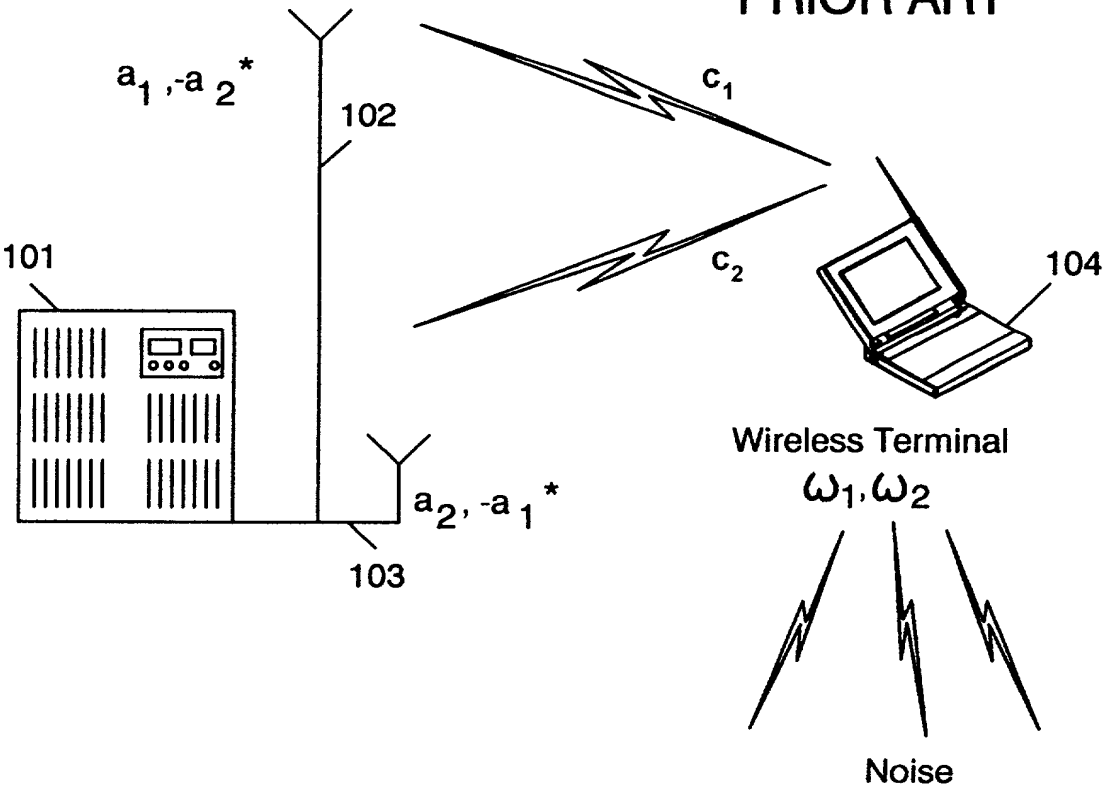


FIG. 2
PRIOR ART

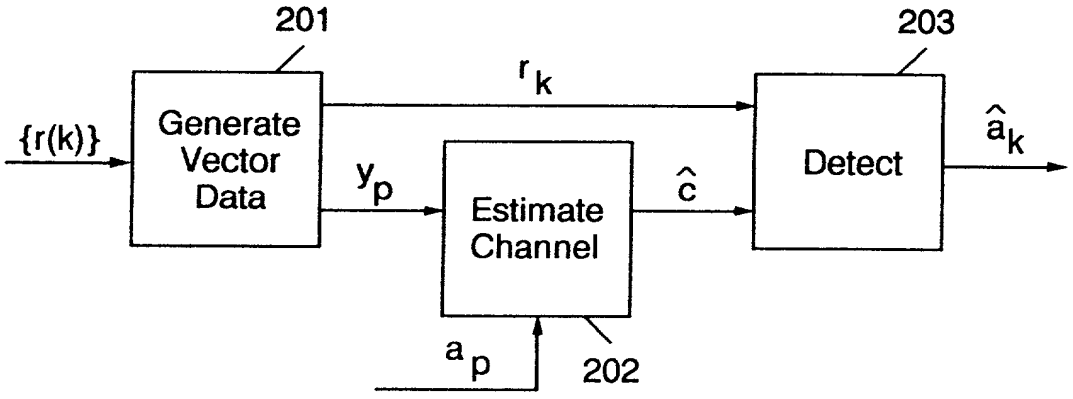


FIG. 3

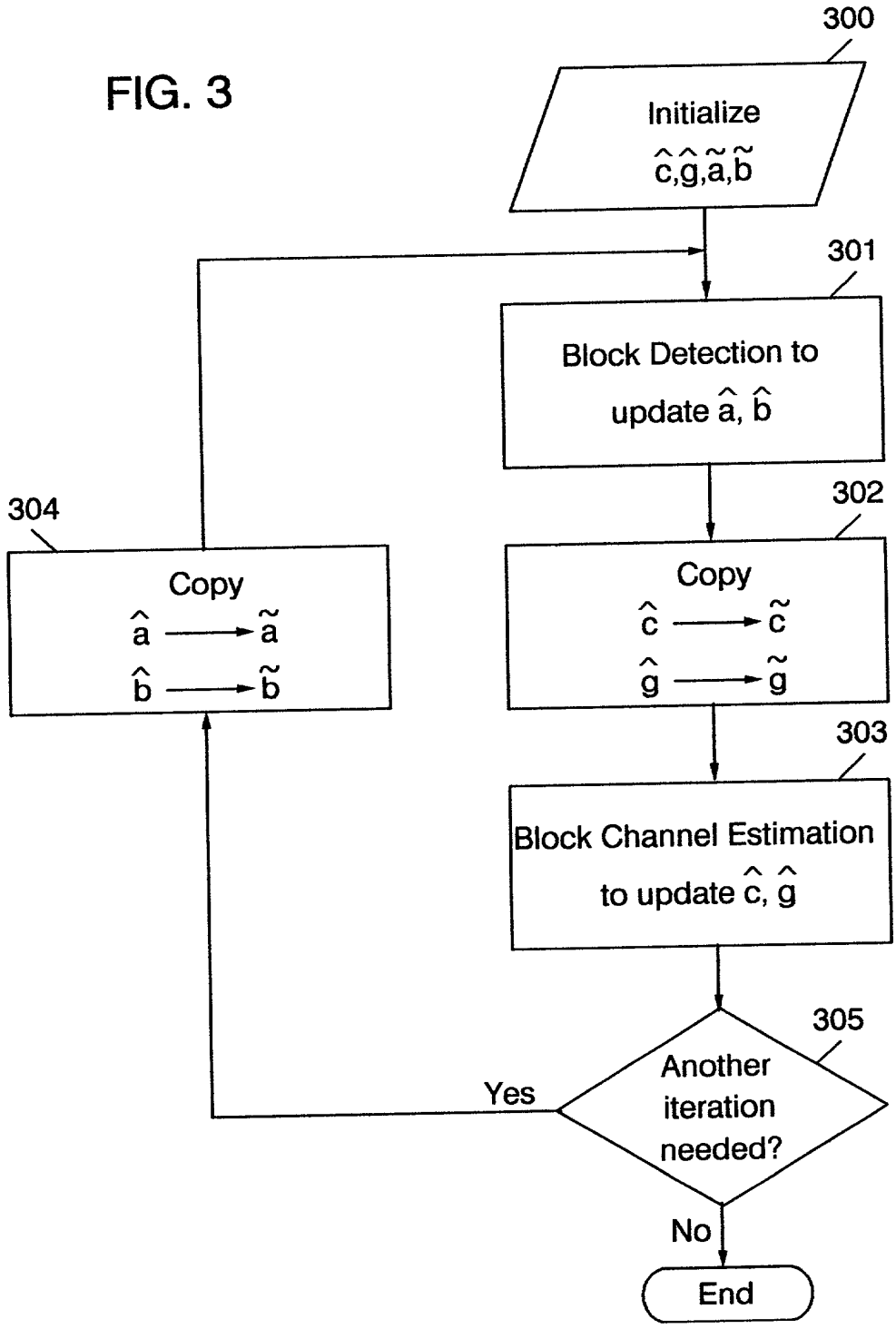

300
Initialize
$\hat{c},\hat{g},\tilde{a},\tilde{b}$
301
Block Detection to update $\hat{a}$, $\hat{b}$
302
Copy
$\hat{c} \rightarrow \tilde{c}$
$\hat{g} \rightarrow \tilde{g}$
303
Block Channel Estimation to update $\hat{c}$, $\hat{g}$
305
Another iteration needed?
Yes
No
304
Copy
$\hat{a} \rightarrow \tilde{a}$
$\hat{b} \rightarrow \tilde{b}$
End

FIG. 4

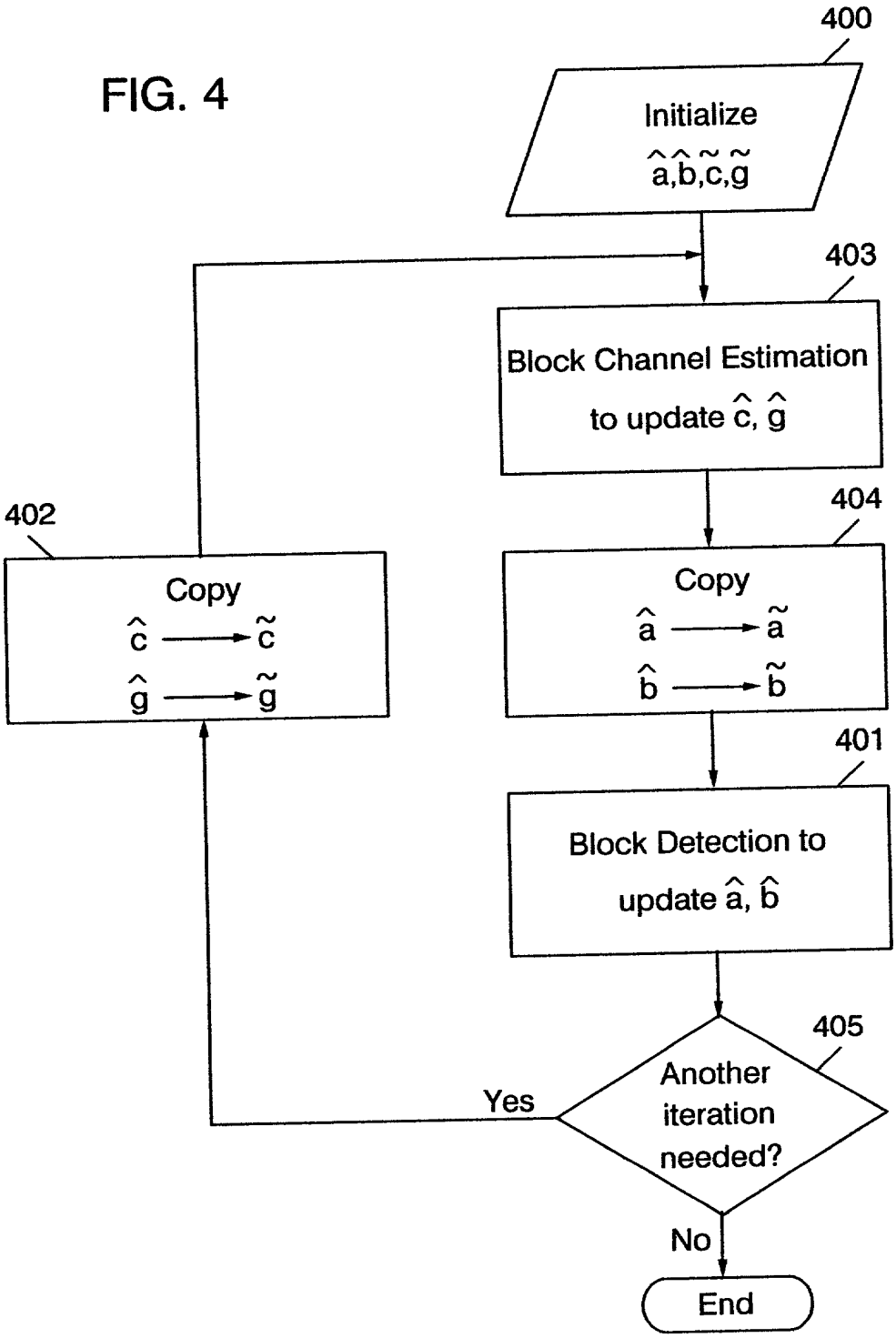

400
Initialize
$\hat{a},\hat{b},\tilde{c},\tilde{g}$
403
Block Channel Estimation
to update $\hat{c}$, $\hat{g}$
404
Copy
$\hat{a} \rightarrow \tilde{a}$
$\hat{b} \rightarrow \tilde{b}$
401
Block Detection to
update $\hat{a}$, $\hat{b}$
405
Another
iteration
needed?
Yes
No
End
402
Copy
$\hat{c} \rightarrow \tilde{c}$
$\hat{g} \rightarrow \tilde{g}$

FIG. 5

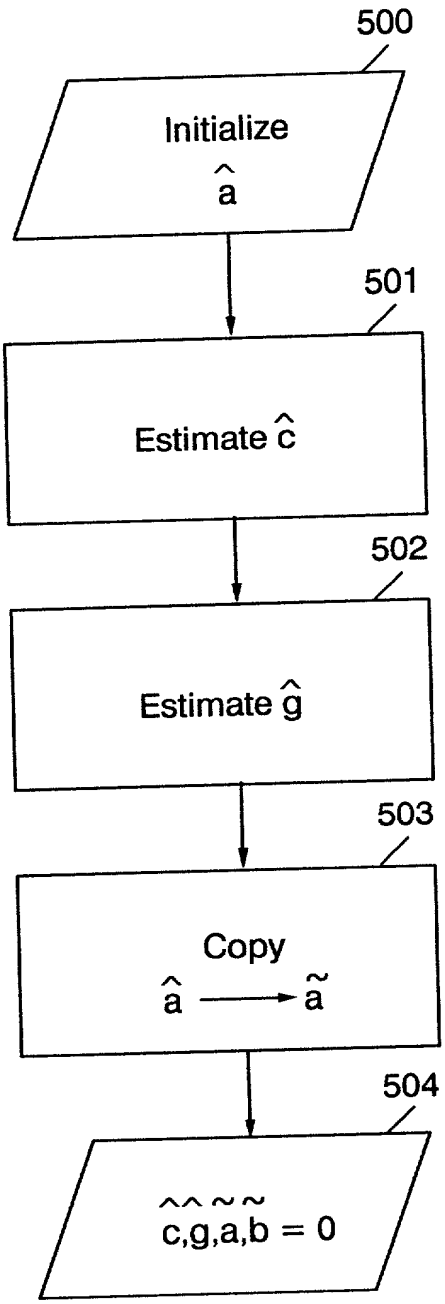

500
Initialize
$\hat{a}$
501
Estimate $\hat{c}$
502
Estimate $\hat{g}$
503
Copy
$\hat{a} \rightarrow \tilde{a}$
504
$\hat{c}\hat{g}\tilde{a}\tilde{b} = 0$

FIG. 6

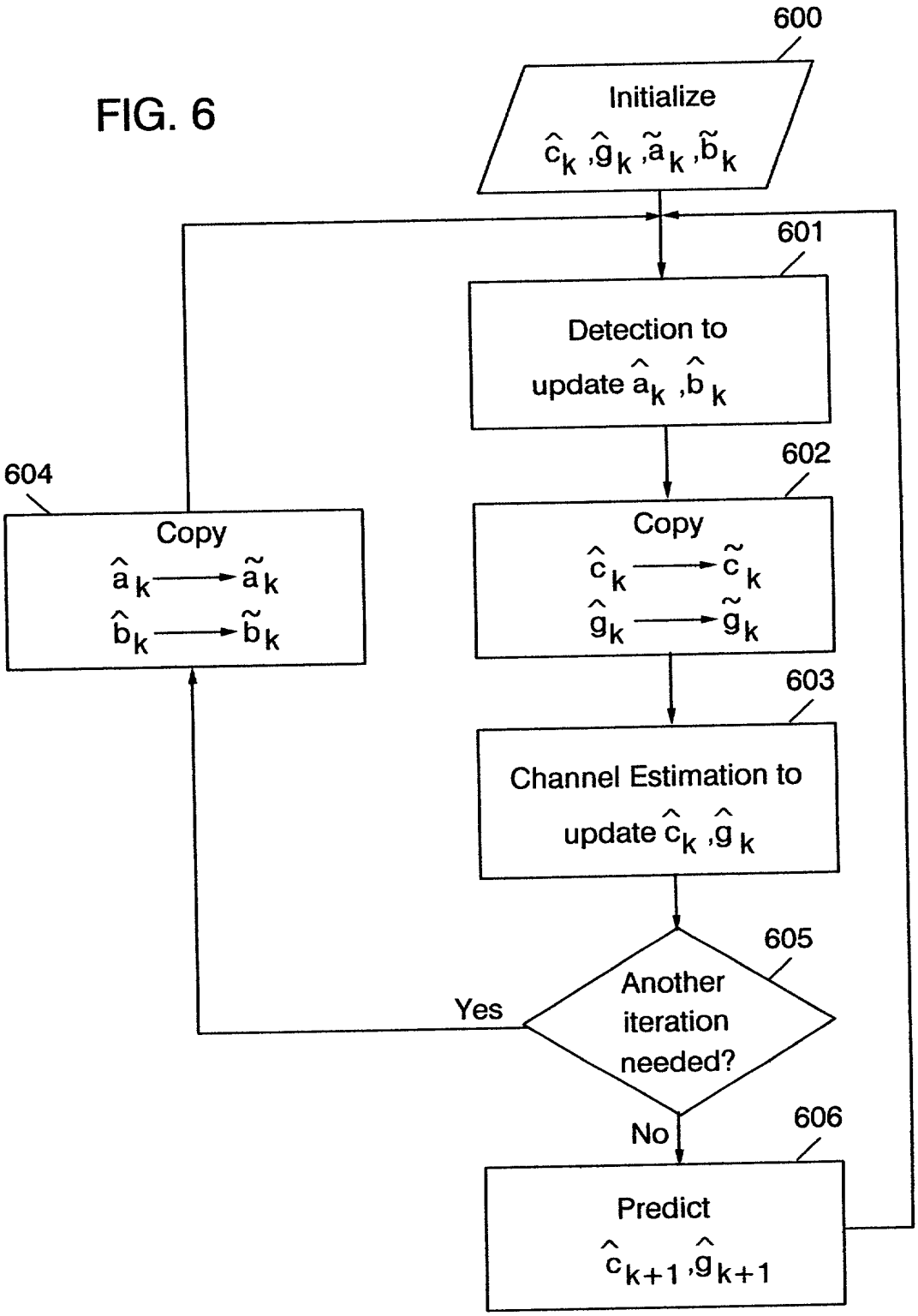

600
Initialize
$\hat{c}_k, \hat{g}_k, \tilde{a}_k, \tilde{b}_k$
601
Detection to update $\hat{a}_k, \hat{b}_k$
602
Copy
$\hat{c}_k \rightarrow \tilde{c}_k$
$\hat{g}_k \rightarrow \tilde{g}_k$
603
Channel Estimation to update $\hat{c}_k, \hat{g}_k$
605
Another iteration needed?
Yes
No
604
Copy
$\hat{a}_k \rightarrow \tilde{a}_k$
$\hat{b}_k \rightarrow \tilde{b}_k$
606
Predict
$\hat{c}_{k+1}, \hat{g}_{k+1}$

FIG. 7

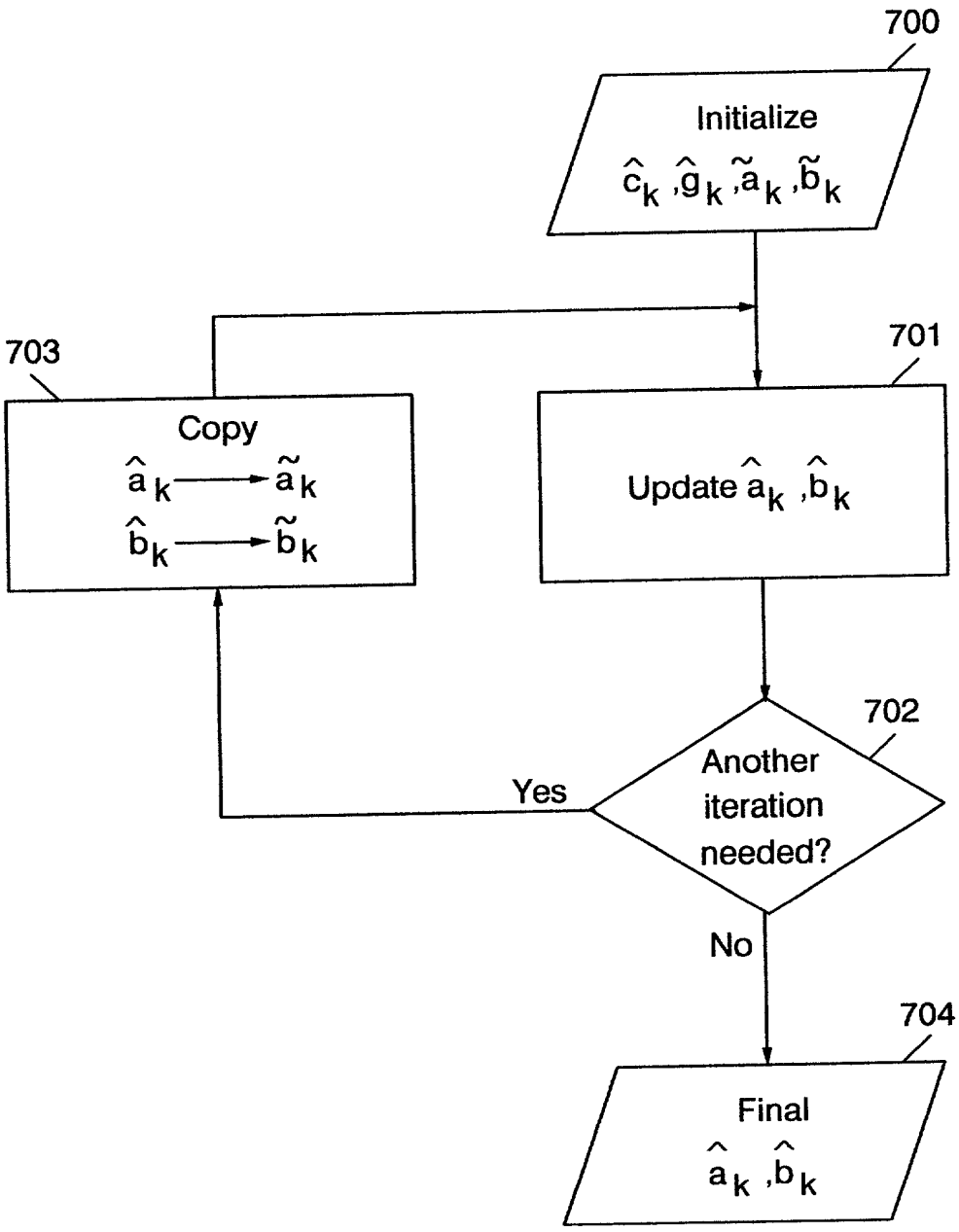

700
Initialize
$\hat{c}_k, \hat{g}_k, \tilde{a}_k, \tilde{b}_k$
701
Update $\hat{a}_k, \hat{b}_k$
702
Another iteration needed?
Yes
No
703
Copy
$\hat{a}_k \rightarrow \tilde{a}_k$
$\hat{b}_k \rightarrow \tilde{b}_k$
704
Final
$\hat{a}_k, \hat{b}_k$

FIG. 8

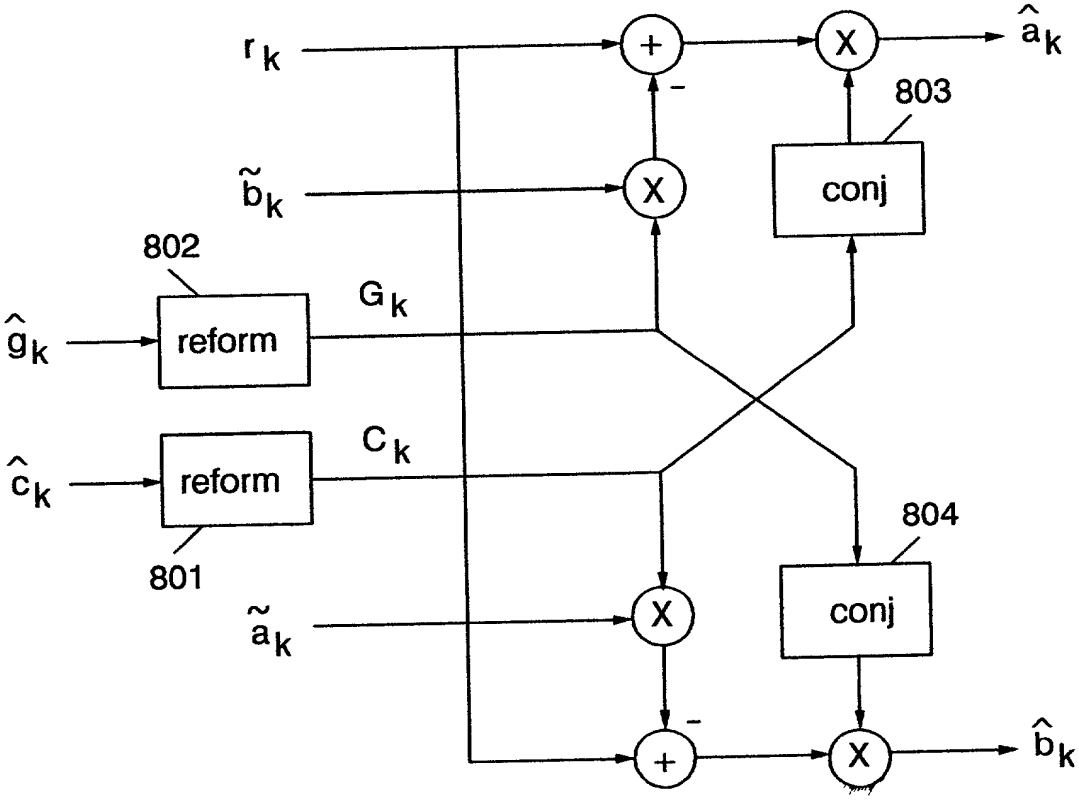

r_k
$\tilde{b}_k$
802
$\hat{g}_k$
reform
G_k
$\hat{c}_k$
reform
C_k
801
$\tilde{a}_k$
+
-
X
803
conj
804
conj
+
-
X
$\hat{a}_k$
$\hat{b}_k$

FIG. 9

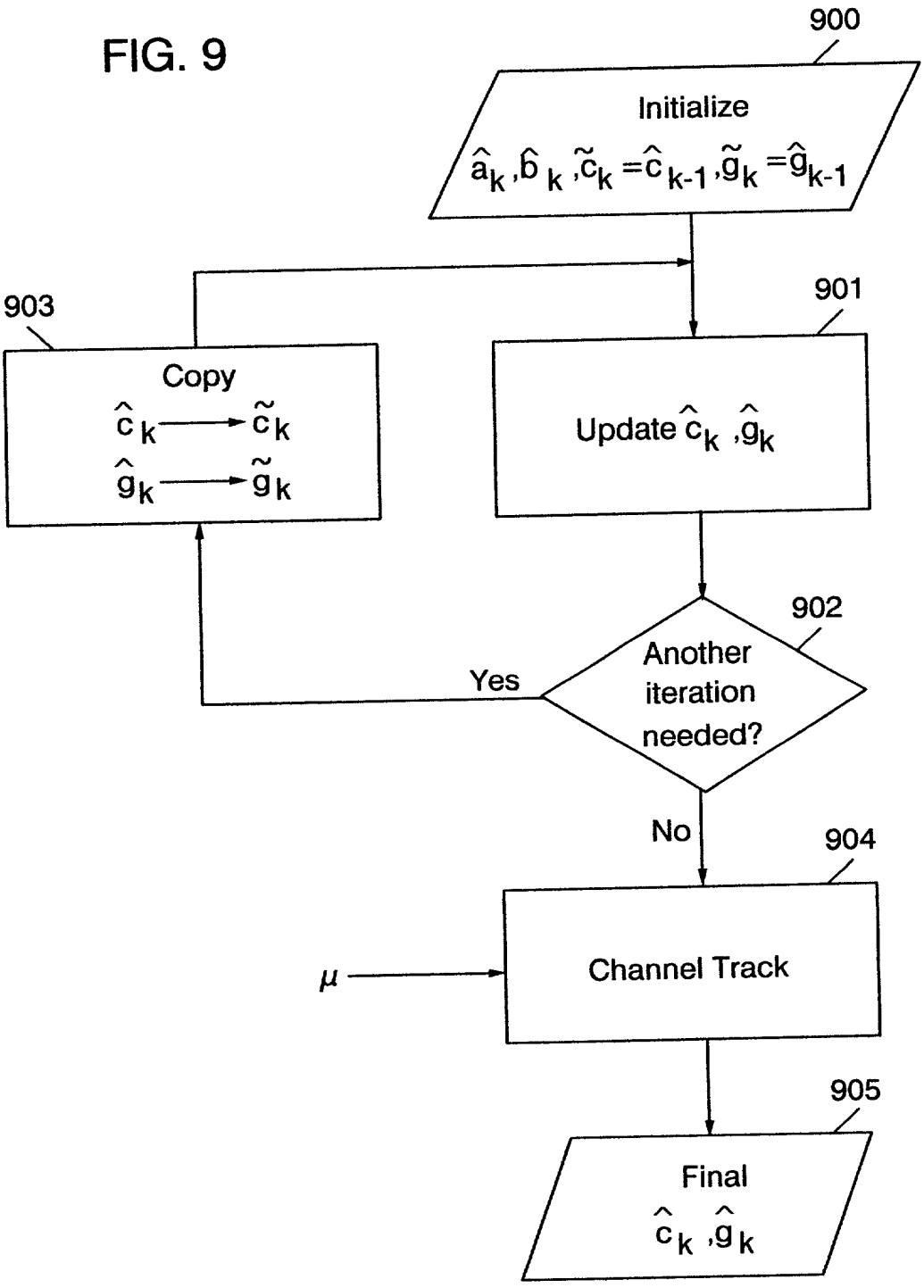

900
Initialize
$\hat{a}_k, \hat{b}_k, \tilde{c}_k = \hat{c}_{k-1}, \tilde{g}_k = \hat{g}_{k-1}$
901
Update $\hat{c}_k$, $\hat{g}_k$
902
Another iteration needed?
Yes
No
903
Copy
$\hat{c}_k \rightarrow \tilde{c}_k$
$\hat{g}_k \rightarrow \tilde{g}_k$
904
Channel Track
μ
905
Final
$\hat{c}_k$, $\hat{g}_k$

FIG. 10

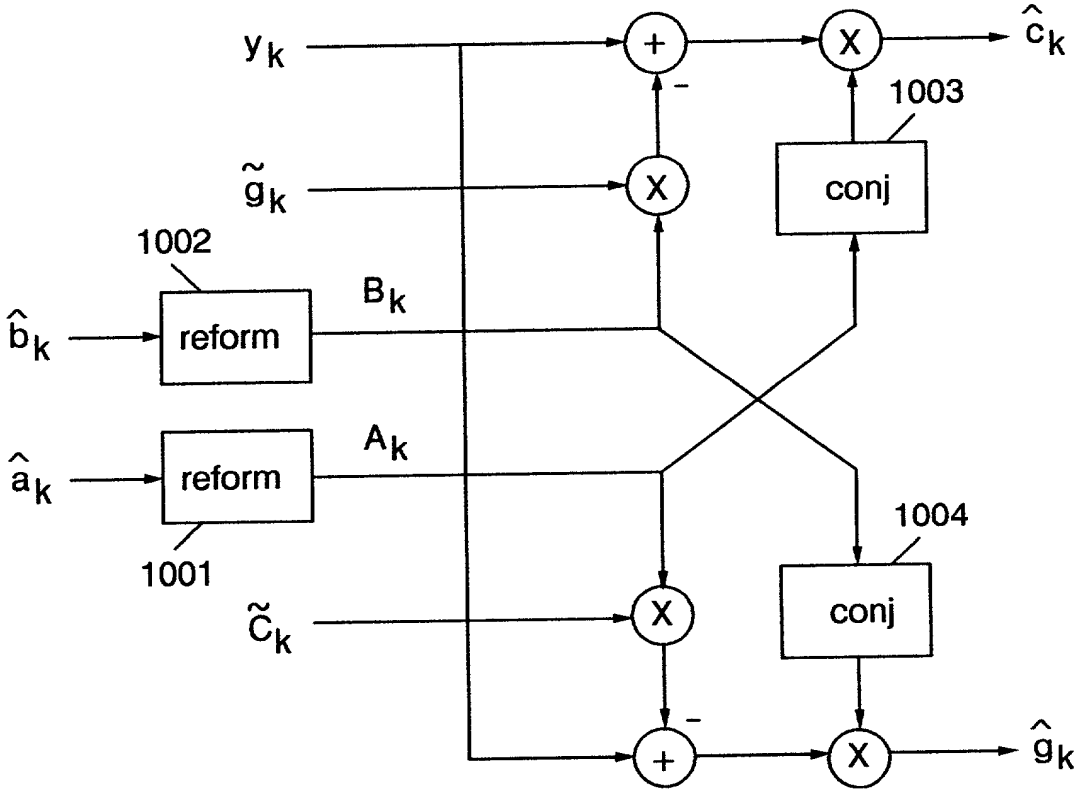

y_k
$\tilde{g}_k$
$\hat{b}_k$
$\hat{a}_k$
$\tilde{C}_k$
1002
reform
B_k
reform
A_k
1001
+
X
X
1003
conj
1004
conj
X
+
X
$\hat{c}_k$
$\hat{g}_k$

FIG. 11

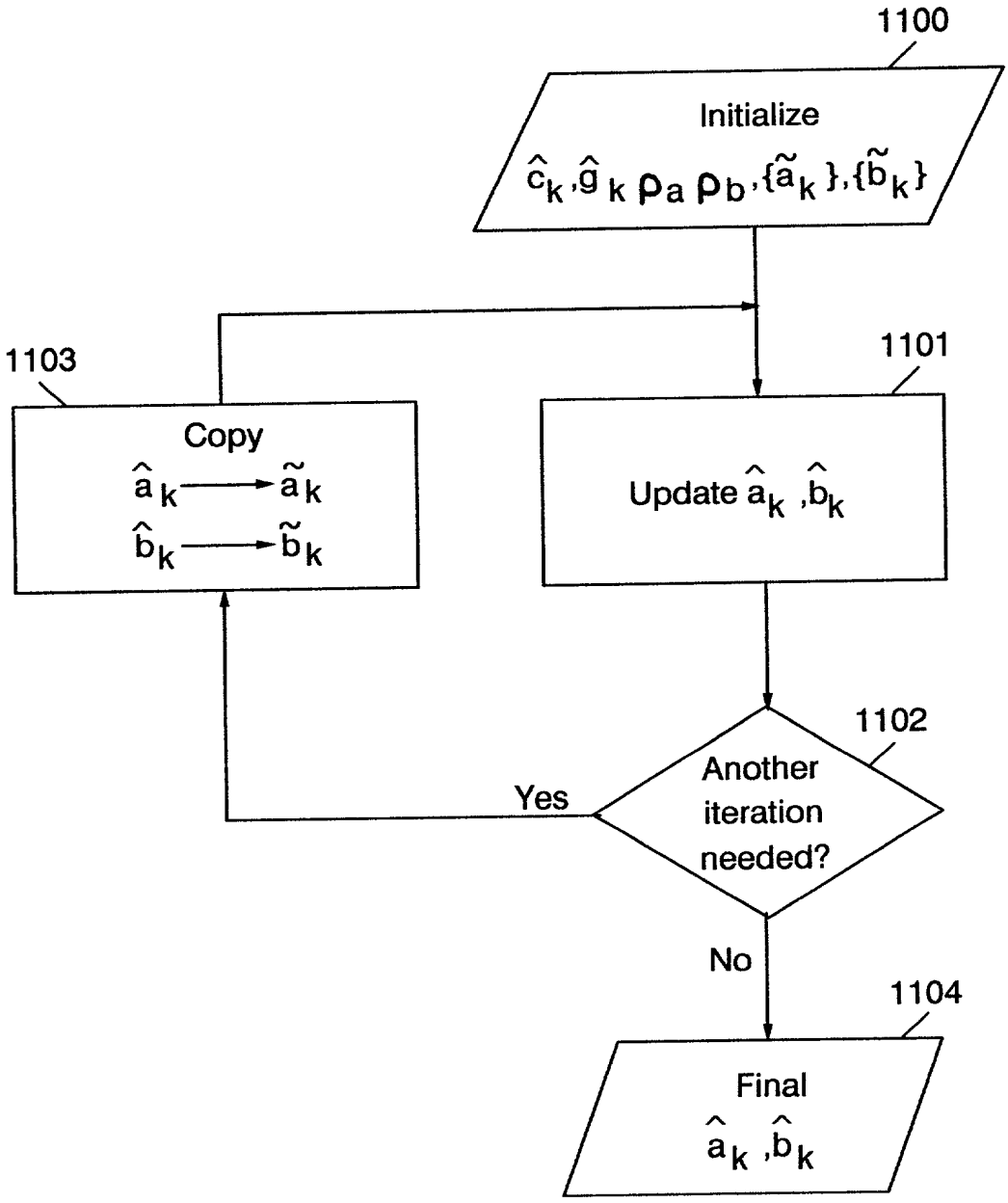

1100
Initialize
$\hat{c}_k, \hat{g}_k \rho_a \rho_b, \{\tilde{a}_k\}, \{\tilde{b}_k\}$
1101
Update $\hat{a}_k, \hat{b}_k$
1102
Another iteration needed?
Yes
No
1103
Copy
$\hat{a}_k \rightarrow \tilde{a}_k$
$\hat{b}_k \rightarrow \tilde{b}_k$
1104
Final
$\hat{a}_k, \hat{b}_k$

FIG. 12

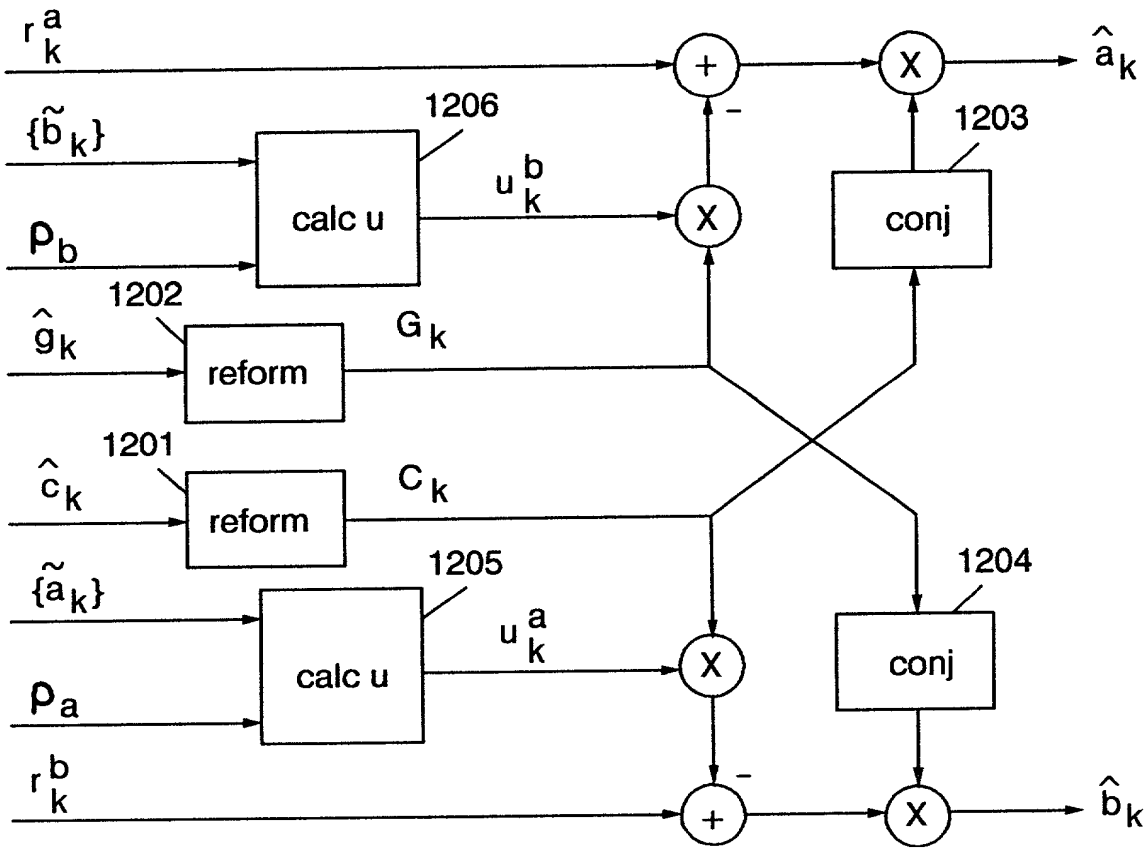

r a k
{b̃ k}
ρb
calc u
1206
u b k
ĝ k
1202
reform
G k
ĉ k
1201
reform
C k
{ã k}
ρa
calc u
1205
u a k
r b k
+
-
X
1203
conj
1204
conj
â k
b̂ k

FIG. 13

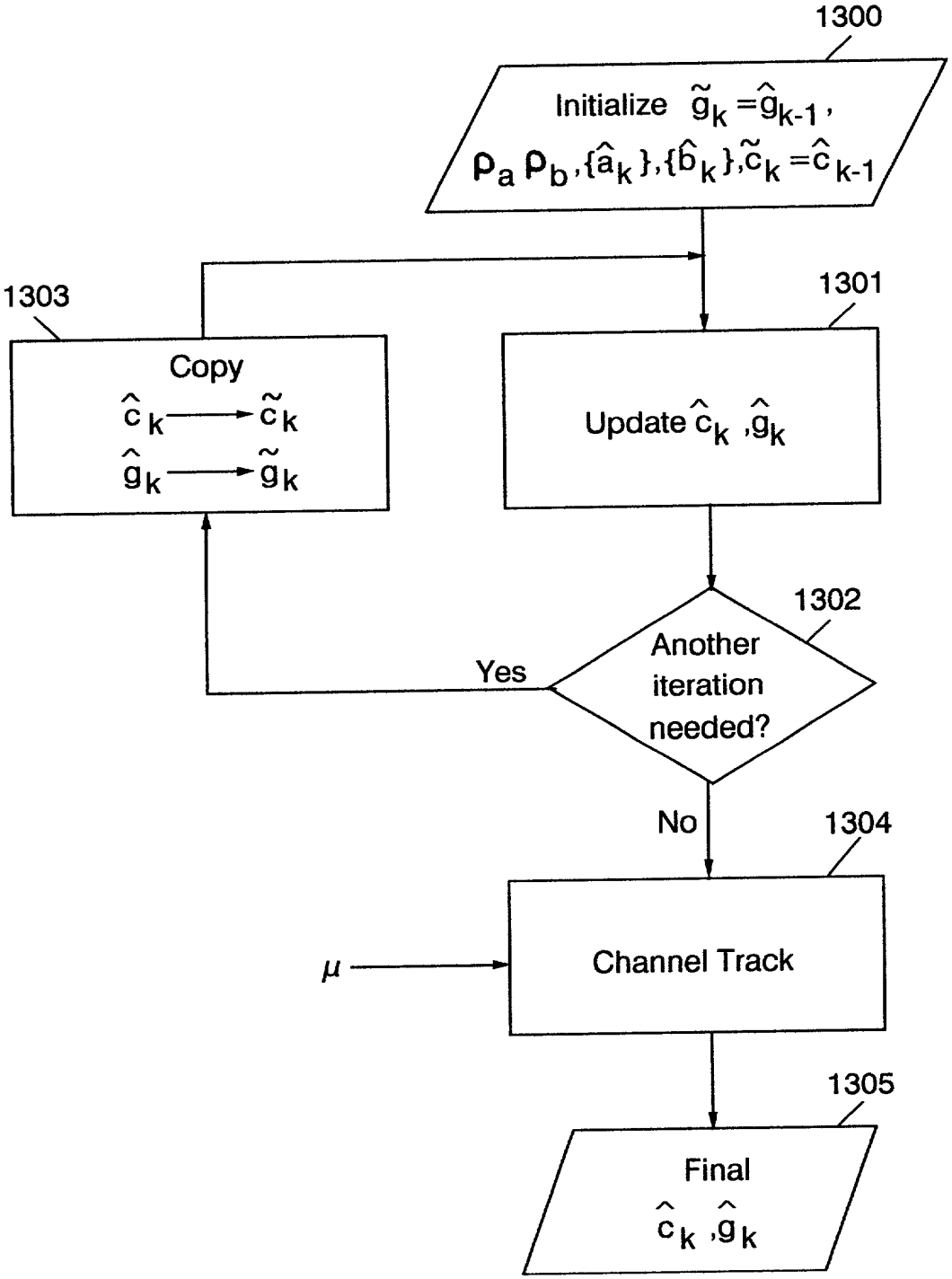

1300
Initialize $\tilde{g}_k = \hat{g}_{k-1}$,
$\rho_a \rho_b, \{\hat{a}_k\}, \{\hat{b}_k\}, \tilde{c}_k = \hat{c}_{k-1}$
1303
Copy
$\hat{c}_k \rightarrow \tilde{c}_k$
$\hat{g}_k \rightarrow \tilde{g}_k$
1301
Update $\hat{c}_k$, $\hat{g}_k$
1302
Another iteration needed?
Yes
No
1304
μ
Channel Track
1305
Final
$\hat{c}_k$, $\hat{g}_k$

FIG. 14

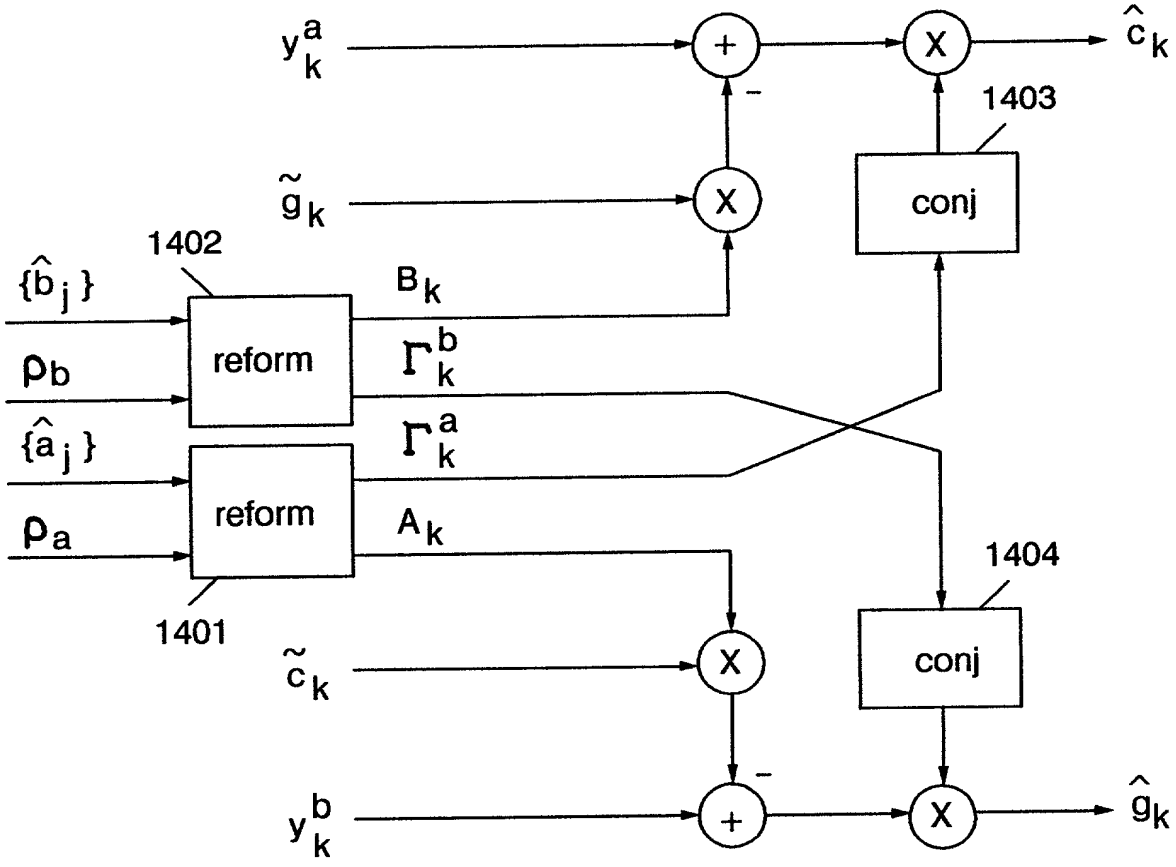
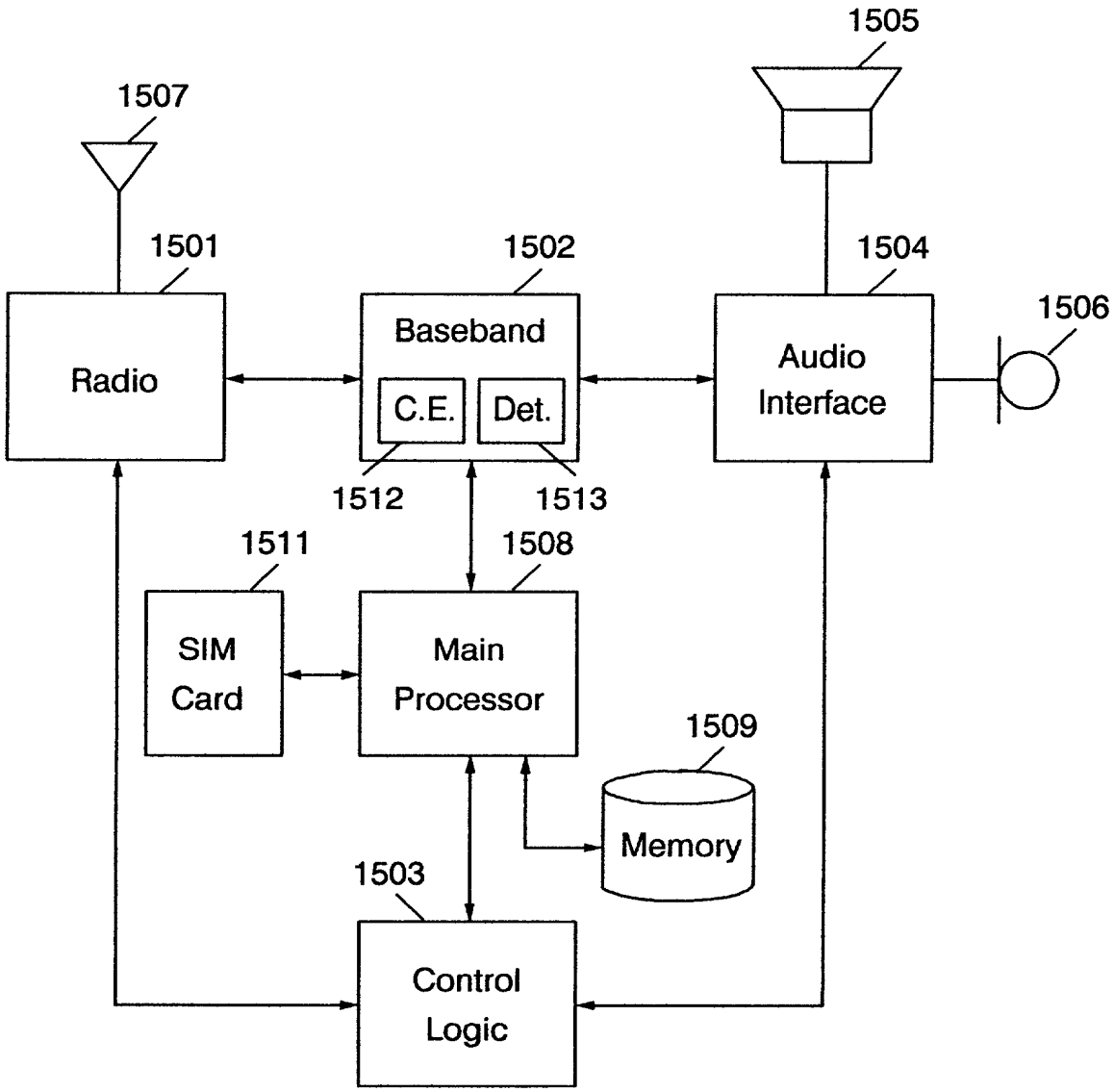

y_k^a
+
X
$\hat{c}_k$
1403
$\tilde{g}_k$
X
conj
1402
$\{\hat{b}_j\}$
B_k
reform
ρ_b
Γ_k^b
$\{\hat{a}_j\}$
Γ_k^a
reform
ρ_a
A_k
1404
1401
$\tilde{c}_k$
X
conj
y_k^b
+
X
$\hat{g}_k$

FIG. 15


1505
1507
1501
1502
1504
1506
Radio
Baseband
C.E.
Det.
Audio
Interface
1512
1513
1511
1508
SIM
Card
Main
Processor
1509
Memory
1503
Control
Logic